CLAIM AMENDMENTS

1. (original) A controllable brake comprising:

(a) a housing comprising a first chamber and a second chamber;

(b) a shaft comprising a first shaft end, the shaft extending through the first and second housing chambers;

(c) a rotor made integral with the shaft substantially at the first shaft end, the rotor having an outer periphery, said rotor being located in the first housing chamber;

(d) field generating means located in the first housing chamber proximate the outer periphery of the rotor;

(e) field responsive material located in said first chamber, the rheology of said material being affected by said field generating means; and

(f) means for controlling and/or monitoring the operation of the brake, said means located in said second chamber.

2. (canceled)

3. (canceled)

4. (withdrawn) The controllable brake of claim 2, further comprising a return-to-center acting device in at least one of the first chamber and the second chamber to urge the rotor to return to a relative center position.

5. (withdrawn) The controllable brake of claim 2, wherein the shaft and rotor are connected in a manner to allow backlash between the rotor and the shaft, and the electronics is configured for detecting movement of the shaft.

6. (canceled)

7. (canceled)

8. (withdrawn) The controllable brake of claim 6, wherein said shaft is supported for rotation by bearings in said housing, and further comprising seals for sealing said first chamber to retain said controllable material therein.

9. (withdrawn) The controllable brake of claim 6, further comprising a return-to-center acting device in the first chamber to urge the rotor to return to a relative center position.

10. (withdrawn) The controllable brake of claim 6, wherein the shaft and rotor are connected in a manner to allow backlash between the rotor and the shaft.

11. (canceled)

12. (canceled)

13. (withdrawn) The controllable brake of claim 11, wherein said electromagnetic field generator comprises an electromagnetic coil, and poles disposed axially with respect to one side of the rotor, and wherein said rotor comprises a disk.

14. (withdrawn) The controllable brake of claim 11, wherein said electronics further comprises sensors for detecting relative rotational position of the rotor.

15. (withdrawn) The controllable brake of claim 11, further comprising a return-to-center acting device of the first chamber to urge the rotor to return to a relative center position.

16. (withdrawn) The controllable brake of claim 11, wherein the shaft and rotor are connected in a manner to allow backlash between the rotor and the shaft, and the electronics is configured for detecting movement of the shaft.

17. (withdrawn) A controllable brake, comprising:

(a) a rotor having first and second rotor surfaces, an outer periphery, and a working portion on the outer periphery and on the first and second rotor surfaces at a portion proximate the outer periphery;

(b) a shaft having said rotor connected thereto in a manner to restrain relative rotation therebetween;

(c) a housing having a first chamber rotatably housing the rotor therein, and including a magnetic field generator spaced from the rotor, and for generating a magnetic flux in directions both, (1) through a controllable material parallel to the shaft and perpendicular to the working portion proximate the outer periphery, and (2) through a controllable material perpendicular to the shaft and to the outer periphery of the rotor; and

(d) a controllable material contained within said first chamber in contact with at least the working portion of the rotor and the periphery thereof.

18. (withdrawn) The controllable brake of claim 17, wherein said electromagnetic field generator comprises an electromagnetic coil, and poles positioned for generating a flux extending through controllable material on one side of the rotor, and wherein said rotor comprises a disk.

19. (withdrawn) The controllable brake of claim 17, further comprising a return-to-center acting device in the first chamber to urge the rotor to return to a relative center position.

20. (withdrawn) The controllable brake of claim 17, wherein said magnetic field generator comprises an electromagnetic coil, a first pole associated with the electromagnetic coil adjacent a working surface of the rotor, and a second pole extending spaced beyond the periphery of said rotor for generating magnetic fields which is extended perpendicular to each other in relation to the rotor periphery and the working surface.

21. (withdrawn) A controllable brake, comprising:

(a) a rotor having first and second rotor surfaces, an outer periphery, and a working portion on the outer periphery and on the first and second rotor surfaces at a portion proximate the outer periphery;

(b) a shaft having said rotor connected thereto in a manner to restrain relative rotation therebetween;

(c) a housing having a first chamber rotatably housing the rotor therein, and including a magnetic field generator spaced from the rotor, and for generating magnetic flux in a direction both, (1) through a controllable material parallel to the shaft and perpendicular to the working portion proximate to the outer periphery, and (2) through a controllable material perpendicular to the shaft and to the outer periphery of the rotor, and a second chamber containing electronics therein; and

(d) a controllable material contained within said first chamber in contact with at least the working portion of the rotor and the periphery thereof.

22. (withdrawn) The controllable brake of claim 21, wherein said electromagnetic field generator comprises an electromagnetic coil, and poles positioned for generating a field on one side of the rotor, and wherein said rotor comprises a disk.

23. (withdrawn) The controllable brake of claim 21, wherein said shaft is supported for rotation by bearings in said housing, and further comprising seals for sealing said first chamber to retain said controllable material therein.

24. (withdrawn) The controllable brake of claim 21 wherein said electronics further comprises sensors for detecting relative rotational position of the rotor, for applying a magnetic field whose strength is determined by relative rotational position of the rotor.

25. (withdrawn) The controllable brake of claim 21, further comprising a return-to-center acting device in at least one of the first chamber and the second to urge the rotor to return to a relative center position.

26. (withdrawn) The controllable brake of claim 25, wherein the shaft and rotor are connected in a manner to allow backlash between the rotor and the shaft, and the electronics is configured for detecting movement of the shaft and for causing the magnetic field generator to reduce the magnetic field in response to shaft movement.

27. (withdrawn) A controllable brake, comprising:

(a) a rotor shaped to have working portion on its periphery which extends parallel to a shaft on which said rotor is mounted;

(b) a shaft having said rotor connected thereto in a manner to restrain relative rotation therebetween;

(c) a housing having a first chamber rotatably housing the rotor therein, and including a magnetic field generator spaced from the rotor, and configured and positioned for generating magnetic flux through a controllable material in a direction perpendicular to the shaft and to the working portion of the rotor; and

(d) a material contained within said first chamber in contact with at least the working portion of the rotor.

28. (withdrawn) The controllable brake of claim 27, wherein said shaft is supported for rotation by bearings in said housing, and further comprising seals for sealing said first chamber to retain said controllable material therein.

29. (withdrawn) The controllable brake of claim 27, further comprising a return-to-center active device in the first chamber to urge the rotor to return to a relative center position.

30. (withdrawn) The controllable brake of claim 27, wherein the shaft and rotor are connected in a manner to allow backlash between the rotor and the shaft.

31. (withdrawn) The controllable brake of claim 27, wherein the walls of said chamber are tapered to result in larger chamber volume proximate the working surface of the rotor, said taper being an amount sufficient to enhance migration of said controllable material away from the shaft and toward the working surface of the rotor.

32. (withdrawn) A controllable brake, comprising:

(a) a rotor manufactured from magnetically permeable material and shaped to have working portion on its periphery which extends parallel to a shaft on which said rotor is mounted;

(b) a shaft having said rotor connected thereto at one end of the shaft in a manner to restrain relative rotation therebetween;

(c) a housing having a first chamber rotatably housing the rotor therein, and including a magnetic field generator spaced from the rotor, and configured and positioned for generating a magnetic flux through a controllable material in a direction perpendicular to the shaft and to the working portion of the rotor, and a second chamber containing electronics therein; and

(d) a controllable material contained within said first chamber in contact with at least the working portion of the rotor.

33. (withdrawn) The controllable brake of claim 32, wherein said shaft is supported for rotation by bearings in said housing, and further comprising seals for sealing said first chamber to retain said controllable material therein.

34. (withdrawn) The controllable brake of claim 32, wherein said electronics further comprises sensors for detecting relative rotational position of the rotor, and for control of the magnetic field generator to apply a magnetic field whose strength is determined by relative rotational position of the rotor.

35. (withdrawn) The controllable brake of claim 32, further comprising a return-to-center acting device in at least one of the first chamber and the second chamber to urge the rotor to return to a relative center position.

36. (withdrawn) The controllable brake of claim 32, wherein the shaft and rotor are connected in a manner to allow backlash between the rotor and the shaft, and the electronics is configured for detecting movement of the shaft for causing the magnetic field generator to reduce the magnetic field in response to shaft movement.